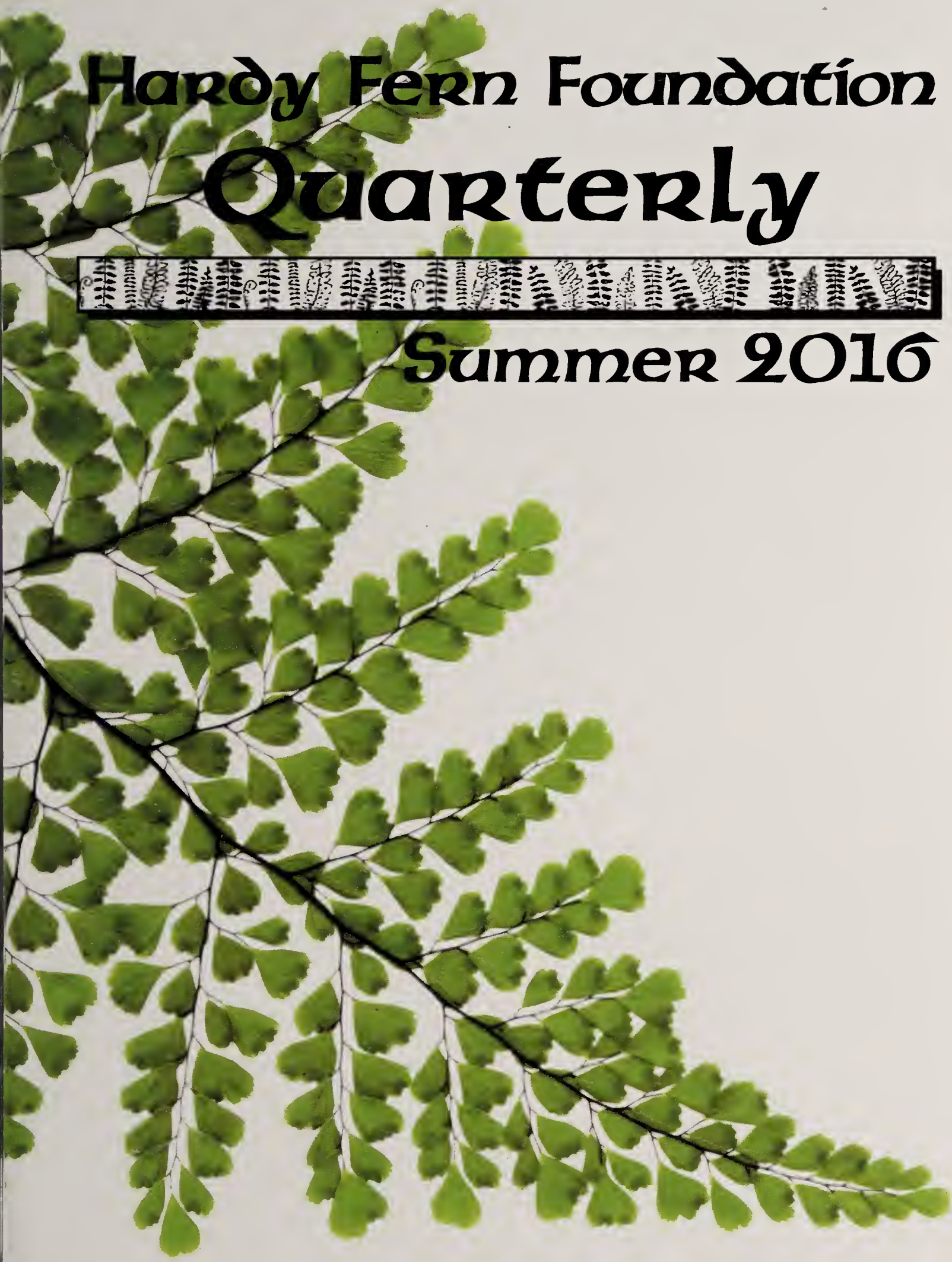
Hardy Fern Foundation

Quarterly

Summer 2016



THE HARDY FERN FOUNDATION

P.O. Box 3797

Federal Way, WA 98063-3797

Web site: www.hardyferns.org

The Hardy Fern Foundation was founded in 1989 to establish a comprehensive collection of the world's hardy ferns for display, testing, evaluation, public education and introduction to the gardening and horticultural community. Many rare and unusual species, hybrids and varieties are being propagated from spores and tested in selected environments for their different degrees of hardiness and ornamental garden value.

The primary fern display and test garden is located at, and in conjunction with, The Rhododendron Species Botanical Garden at the Weyerhaeuser Corporate Headquarters, in Federal Way, Washington.

Affiliate fern gardens are at the Bainbridge Island Library, Bainbridge Island, Washington; Bellevue Botanical Garden, Bellevue, Washington; Birmingham Botanical Gardens, Birmingham, Alabama; Coastal Maine Botanical Garden, Boothbay, Maine; Dallas Arboretum, Dallas, Texas; Denver Botanic Gardens, Denver, Colorado; Georgia Perimeter College Garden, Decatur, Georgia; Inniswood Metro Gardens, Columbus, Ohio; Lakewold, Tacoma, Washington; Lotusland, Santa Barbara, California; Rotary Gardens, Janesville, Wisconsin; Strybing Arboretum, San Francisco, California; University of California Berkeley Botanical Garden, Berkeley, California; and Whitehall Historic Home and Garden, Louisville, Kentucky.

Hardy Fern Foundation members participate in a spore exchange, receive a quarterly newsletter and have first access to ferns as they are ready for distribution.

Cover design by Willanna Bradner

HARDY FERN FOUNDATION QUARTERLY

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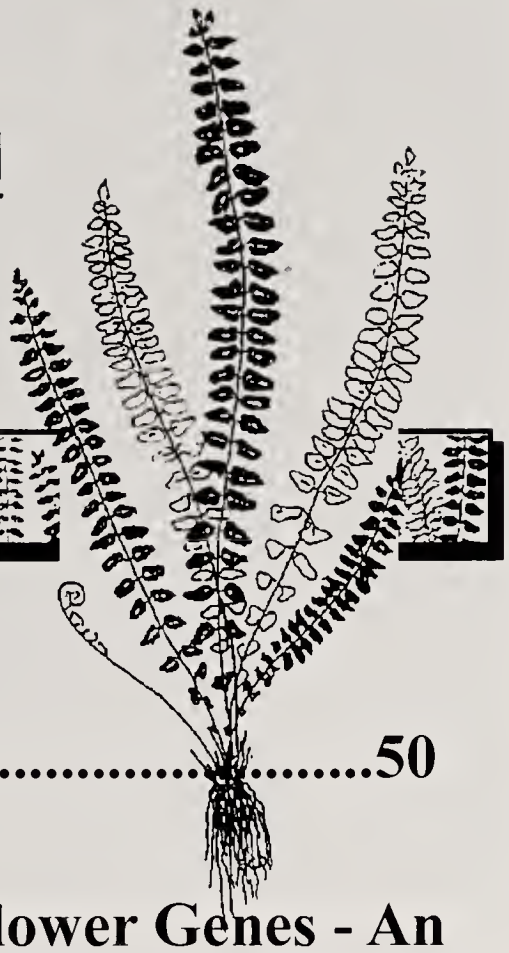


President's Message

One of the pleasures of the presidency is to represent the Hardy Fern Foundation at various events. I just returned from an extraordinary trip to Ireland and the United Kingdom visiting gardens, seeing HFF members from abroad and attending the British Pteridological Society's (BPS) National Field Meeting celebrating their 125th Anniversary. The HFF has had a close and friendly relationship with the BPS since our founding and attending this pivotal event was an inspiration to me for the future of both of our organizations. Our common interest in ferns has linked these two groups together for the last 27 years and the friendships formed over this time are as important as the plants we enjoy so much. You can look forward to reading more about the BPS celebration in future issues of the Quarterly.

Looking toward the next few months, many HFF members will have a chance to meet and learn more about ferns at some of our upcoming events. In mid-August board member Forrest Campbell has organized a hike to the richest fern region in Washington, the Perry Creek Research Natural Area. The trail roughly follows Perry Creek and contains more different species of fern and fern allies than anywhere else in Washington State. It is a great opportunity to meet fellow ferners and learn about some of our common and not so common native ferns.

If you cannot make the hike, mark your calendars for the HFF Fall Plant Sale and the Fall Fern Social. Both will be held at the Bellevue Botanical Garden. This will be our first fall plant sale and will be held on September 17th from 10 am to 3 pm. The plant sale will feature a wide range of ferns grown exclusively by the Hardy Fern Foundation and 100% of the proceeds will benefit the organization.

The Fall Fern Social will be held on October 22nd from 11 am to 3 pm. and features a potluck lunch and great cut frond display collected from the HFF's main display garden, the Miller Botanical Garden and choice ferns from several board member's gardens. After lunch I will be lecturing on "The Odd & Unusual and the Particular & Precious Ferns of My Travels", a great chance to see some rarities from around the world.

All the best,

Richie Steffen
HFF President

Perry Creek - Photo courtesy of Jo Laskowski

In Defense of Plants

A Fern with Flower Genes ~ An Odd Case of Horizontal Gene Transfer

Facebook – December 2, 2015

When researchers at Harvard decided to take a look at the genome of the rattlesnake fern (*Botrychium virginianum*) they found something completely unexpected. Whereas one set of genes they looked at placed this species firmly in the family to which it belongs, Ophioglossaceae, two other genes placed it in the Loranthaceae, a completely unrelated family of flowering plants. What are flowering plant genes doing in a fern?

Photo courtesy of Aaron Carlson

The rattlesnake fern is a ubiquitous species found throughout the northern hemisphere. It is believed to have evolved in Asia and then radiated outward using ancient land bridges that once connected the continents. At some point before this radiation occurred, the rattlesnake fern picked up some genes that were entirely foreign.

Horizontal gene transfer, the transfer of genes from one organism to another without reproduction, is nothing new in nature. Bacteria do it all the time. Even plants dabble in it every now and then. The surprising thing about this recently documented case is that it is the first discovery of horizontal gene transfer between an angiosperm and a fern. Up until this point, examples within the plant realm have been seen between ferns and hornworts as well as some parasitic plants and their hosts.

This is why the rattlesnake fern genome is so interesting. How did this occur? Though there is no way of telling for sure, researchers believe that one of two things could have happened. The first involves root parasitism. The family Loranthaceae is home to the mistletoes, a group of plants most famous for their parasitic nature. Although the majority of mistletoe species are stem parasites, at least three genera utilize root parasitism. It could be that an ancient species of mistletoe transferred some genes while parasitizing a rattlesnake fern.

This scenario seems to be the least likely of the two as no representatives of the root parasitic mistletoes currently exist in Asia, though it is entirely possible that some did at one time. The other possibility doesn't involve parasitism at all but rather fungi. Rattlesnake ferns are obligate mycotrophs and thus cannot live without certain species of mycorrhizal fungi. Perhaps the transfer of genes was achieved indirectly via a shared mycorrhizal network. This hypothesis is especially tantalizing because if it is found

to be true, it would help explain many other examples of horizontal gene transfer that currently lack a mechanism. Only time and more research will tell.

Further Reading:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1560187/

In Evolution, Ecology, Parasites, Fungi Tags rattlesnake fern, fern, horizontal gene transfer, Botrychium virginianum, Loranthaceae, Ophioglossaceae, gene, genetics

http://www.indefenseofplants.com/blog/2015/12/7/a-fern-with-flower-genes-an-odd-case-of-horizontal-gene-transfer?utm_content=bufferf434c&utm_medium=social&utm_source=facebook.com&utm_campaign=buffer

Dryopteris bissetiana Beaded Wood Fern

James R. Horrocks

Salt Lake City, UT

Dryopteris bissetiana
Photo courtesy of Richie Steffen

In *Flora of Japan*, this interesting species is treated as *Dryopteris varia* var. *setosa* but has since been regarded as a distinct species named after 19th century botanist James Bisset. The common name beaded wood fern is derived from the curious and rather unique rounded structures found on the pinnules which give the fronds a distinct beaded appearance. This is a beautiful fern often confused with *D. erythrosora* and other closely related species of that complex. *D. erythrosora* is distinguished in spring with glossy bronze to coppery-pink foliage which gradually becomes a deeper green as opposed to the slight silvery look in new growth of *D. bissetiana*. The indusia in *D. erythrosora* are red in color and this species lacks the rounded beaded segments found in *D. bissetiana*. *D. varia* may cause confusion but this species displays reddish-brown scales while *D. bissetiana* has scales that are pale to dark brown and even black in color. Also, in *D. varia*, the upper portions of the frond narrow suddenly while in *D, bissetiana*, the upper half of the frond gradually narrows. The beaded wood fern is native to China, Korea, and Japan where it is quite common, growing on moist wooded slopes, often up to roadsides.

Description: The rhizome is short-creeping, much like *D. erythrosora*, producing a vase-like array of attractive silvery-green fronds which turn a deep glossy green as they mature. The stipe is about one-third the length of the frond and bears brown to black scales. There is a mixture of narrow blackish scales and small tan scales, giving the

stipe and rachis a mottled or blotchy look. The fronds are produced late in the spring and may even be delayed in some northern areas to early summer. The fronds are one to two feet in length with an arching aspect and are evergreen. They are triangular to oblong-triangular in outline and bipinnate-pinnatifid. There may be 15 or more pairs of pinnae with pinnules whose margins turn slightly downward and lack teeth. The pinnules are narrow-oblong and curved, having a nearly falcate look to them. The pinnae and pinnules taper gradually toward the apex of the frond. The first pinnules on the basal side of the lowest and longest pinnae are quite elongated and fan away from the stipe, in fact, most of the basiscopic pinnules turn away from the stipe and midrib while the upper acroscopic pinnae closest to the midrib may appear parallel to it or slightly turned away. The further the upper pinnules are from the midrib the more they turn away. As has been mentioned, the pinnules display a rounded beady look which adds to the beauty of this attractive fern. The sori are covered with the tell-tale kidney shaped indusia. There is usually one sorus per segment. This is an apogamous species, the spores maturing in the fall.

Culture: John Mickel calls this fern "...one of the most delightful of the *Dryopteris* species." If you are fortunate enough to actually have the real thing in your garden, be glad, since much of what is offered in the nursery trade is actually *D. erythrosora*. Speaking of the general nursery trade, there does seem to be a great deal of confusion, often times from the growers themselves. The author was at a home-improvement center recently and the "Male ferns" offered with big impressive name tags, supposedly *D. filix-mas*, were in fact *D. erythrosora*, which was unfortunate, since the latter does not fare well here in northern Utah. You have to be on your toes and really know what you are looking for. It is probably best to acquire plants from reputable nurseries that truly know what they are offering. Certain specialty mail-order nurseries are probably best to deal with if you want the "real deal".

This beautiful species is at its best in a sheltered spot, nestled among large rocks and well mulched. It is regarded as easy to establish if it is given a cool shaded area. Being of medium size, it blends in well with other ferns, its leathery evergreen fronds staying green even into winter. It may not be suitable for gardens in drier climates. If you can grow *D. erythrosora* you can probably grow this charming species. The beaded appearance of the fronds and their arching habit adds dramatically to its charm. This fern is hardy from Zone 5 through Zone 9.

References:

Hoshizaki, Barbara Joe, and Moran, Robbin C., 2001, *Fern Grower's Manual* (Revised), Timber Press, Portland

Mickel, John, 1994, *Ferns For American Gardens*, Macmillan Publishing Co., New York

Ohwi, Jisaburo, 1965, *Flora of Japan*, Smithsonian Institution, Washington D.C.

Olsen, Sue, 2007, *Encyclopedia of Garden Ferns*, Timber Press, Portland

Myriopters?!

Jo Laskowski

Seattle, WA

It was a mixed audience. Some were lumpers. Some were splitters. Some knew the difference and didn't give a rip. Some didn't know anything about it. Tough crowd.

It's like a flash mob. Every year a bunch of people materializes at a blow-out fern sale and then stay for the evening's entertainment. The blow-out fern sale? The Hardy Fern Foundation's annual Fern Fest, this year on June 3rd and 4th. The evening's entertainment? The Friday evening lecture that features a guest speaker charged with educating or entertaining the assembled mass. The lumpers? General term for those who deplore the ever more finely dissected classification of ferns, and the apparently random proliferation of new names. Long-time fern enthusiasts yearn for the familiar genus and species names that they first encountered. And the families that things used to be in! Revisions tend to make one grumpy. I'm still grouchy about the inclusion of *Equisetum* with the ferns. Splitters? Those ferners who go with the flow, untroubled by former classifications, brow uncreased by the aggravation and disorientation of converting old names into new. Who maybe even totally "get" the mumbo-jumbo, nitty-gritty language of DNA research.

Ed Alverson was the man on hand to tame the crowd that night. He's been a Northwest field botanist, native plant enthusiast, taxonomist, teacher, publisher, habitat restorationist for a while now, some 35 years. He's currently involved in a huge taxonomic revision of the many fern families that appear in the *Flora of the Pacific Northwest*, published in 1973 by C. Leo Hitchcock and Arthur Cronquist. This book has been in the hands and graced the shelves of thousands of people. Ed still has his original Hitchcock, a teenaged purchase. It was designed by the authors to be a portable plant identification manual for both professional and amateur botanists. But changes in nomenclature and classifications—driven by new technologies, extensive fieldwork, and the naturalization of new species—are painting a new picture, and calling for a new guide. The 730-page book has become out-date. Here's where the splitters and lumpers put up their dukes. Would there, could there, be resolution?

The Pacific Northwest is one of four fern hotspots in the continental U.S. The others are in the Northeastern US and Great Lakes area, in Florida, and in a small area in the Southwest. Ed waded into his presentation, native ferns of the Pacific Northwest, wound through with the information that new technologies were producing. Splitters would understand the justification for name changes. The lumpers might be a different story. Could he entice them, too?

There are a lot of diverse habitats in the Pacific Northwest, places where very specific characteristics intersect. Ed mentioned several of them, and some of the ferns found in them.

Low elevations:

Polystichum munitum, western sword fern

There is a hybrid between *P. munitum* and *P. kruckebergii*; in other words, a hybrid between low and high elevation plants.

Dryopteris expansa, northern wood fern

Pteridium aquilinum, bracken fern

Athyrium filix-femina, lady fern

Polypodium glycyrrhiza, licorice fern

Selaginella douglasii, Douglas's spikemoss

Its closest relative is in Mexico. Ed's talking about biogeography, or the movement of plants over time.

One of our endemic polystichums is closely related to a fern, *Polystichum falcinellum*, from the Atlantic island of Madeira, off the coast of Portugal.

Wet forests:

Gymnocarpium disjunctum, western oak fern

The species name of this fern—disjunctum—is provocative. *G. disjunctum* does, in fact, have spatially widely separated, or "disjunct," populations in the Pacific Northwest and parts of Russia and Kamchatka.

Coastal forests:

***Polypodium scouleri*, leatherleaf polypody**

Polypodium glycyrrhiza, licorice fern

Polypodium calirhiza

A hybrid between *Polypodium glycyrrhiza* and *P. californicum.* Hybrid origin is indicated by the nifty merge of the two parents' names.

***Hymenophyllum* spp.,** filmy ferns

Adiantum aleuticum* var. *subpumilum

Oftentimes seen in the trade as *Adiantum aleuticum* 'Subpumilum,' the above name as a variety was made "legal" (i.e., taxonomically correct) by Ed a couple of years ago.

Mountain forests:

Polystichum andersonii, Anderson's holly fern

P. munitum is one of its parents. *P. andersonii* is part of a complex with east Asian affinities such as *Polystichum braunii* and *P. setigerum*. You may not want to know that *P. setigerum* is a hybrid of *P. braunii* and *P. munitum*.

Parathelypteris nevadensis, Nevada wood fern

Parathelypteris noveboracensis, New York fern, is the closest relative to this fern, and is found in eastern North America.

***Botrychium* spp.,** grape ferns

The mitochondrial DNA of these ferns was discovered to have come

from a parasitic plant. Given their reduced leaf size and preference for deep shade, their source of nutrients is probably fungal. This suggests they're on the road to parasitism.

Open, rocky habitat:

Asplenium trichomanes* ssp. *trichomanes, maidenhair spleenwort

Only found on acidic rock.

Asplenium trichomanes* ssp. *quadrivalens, maidenhair spleenwort

Commonly found on limestone.

Cystopteris fragilis, fragile fern

Shows varied forms and structures in western North America.

Pellaea brachyptera, Sierra cliff brake

The closest population to the Lake Chelan, Washington population is over 300 miles away in Oregon.

***Cheilanthes* spp.,** lip ferns

These North American ferns were originally named based on their similar appearance to known ferns called *Cheilanthes* elsewhere. DNA work has helped sort out this difficult-to-classify genus, and our ferns are now known as *Myriopteris*.[1] Ed pointed out that very often these re-classifications resurrect historical names. *Myriopteris*, as an example, came in 1852 from Antoine Laurent Apollinaire Fée, a French cryptogamist working with ferns, lichens, and fungi.

Open or ruderal (growing in rubbish, poor land, or waste) habitats:

***Botrychium* spp.,** moonworts

Aquatic/wetland:

Pilularia americana, American pillwort

Found in vernal (occurring in the spring) ponds in eastern Washington, in open salt scablands.

Osmunda regalis* var. *regalis, royal fern

Establishing outside of cultivation.

A fern called *Adiantum shastense* has recently been described. Ed did fieldwork, and had a hand in that. He mentioned that individual fronds live for 2 years. He's still a field botanist.

He's still a teacher. I admit he inclined me to the new revisions, once my curiosity was up. That wasn't too hard to do—how do you explain the amazing associations, the similarities, and the differences?

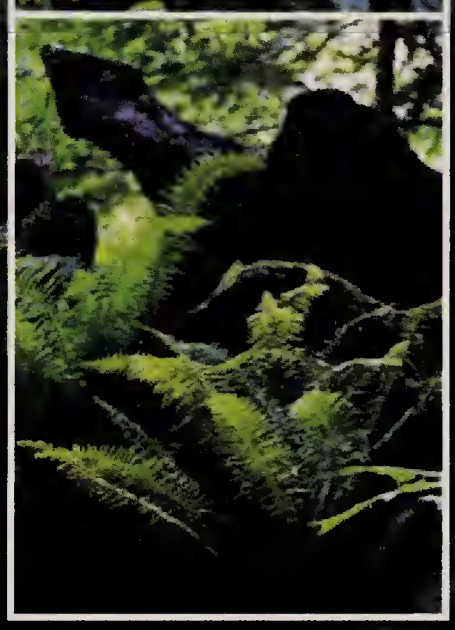
"There's a lot out there we don't know. There are a lot of discoveries yet to be made."
Ed Alverson

Footonote:
1. "*Myriopteris* Fée emend. Grusz & Windham differs from *Cheilanthes* s.s. (i.e., *Cheilanthes micropteris* and its close relatives) in its production of 64 small or 32 large (vs. 32 small or 16 large) spores per sporangium; mostly cristate or rugulose (vs. echinate, granulose, or verrucate) spore ornamentation; a lack of obvious vein endings near the margins of the ultimate segments (vs. often prominent hydathodes), and a largely North and Central American (vs. exclusively South American/Old World) distribution."

ncbi.nlm.nih.gov/pmc/articles/PMC3881352/

Welcome New Members!

Frank Anderson	Frank Koontz
Jill D Bader	Cynthia V La Fleur
Marcia Bartholme	Ann Lesan
Mary Bates	André Mora
Linda Beluche	Lois Moss
Patricia Campbell	Daniel Mount
Lisa Chen	Kaiulani S Osorio
Shanti Claycamp	Peggy Owens
Karlyn Collins	Anne Smiley Percival
Kristine Dillinger	Janet Reda
Mike Ewanciw	Garratt Richardson
Dan Gorrell	Robyn Ricks
Mollie Groendyke	Bill Roeder
Barbara Guthrie	Judith Scott
Kathy Haskin	Nong & Mark Tarlton
Nancy Heckler	VenetiaVango
Lisa Henderson	Verdigris
Julie Hiatt	Bob Wilcox
Paul Jerskey	Alexander Wright
Sandy Keathley	



This image Fern expert Martin Rickard designed the main path, flanked by conifer trunks, stumps, ferns and moss, to curve away out of sight.

Photos from top

Owner Pat Riehl's favourite spot is deep in the ravine where she can look up through the fronds of *Dicksonia antarctica*.

One of Pat's textural green-on-green combinations – northwest native salal (*Gaultheria shallon*) grows up through a deer fern (*Blechnum spicant*).

The tall, evergreen fronds of native sword ferns (*Polystichum munitum*) play off the rugged shape of a blackened stump salvaged from a fire.

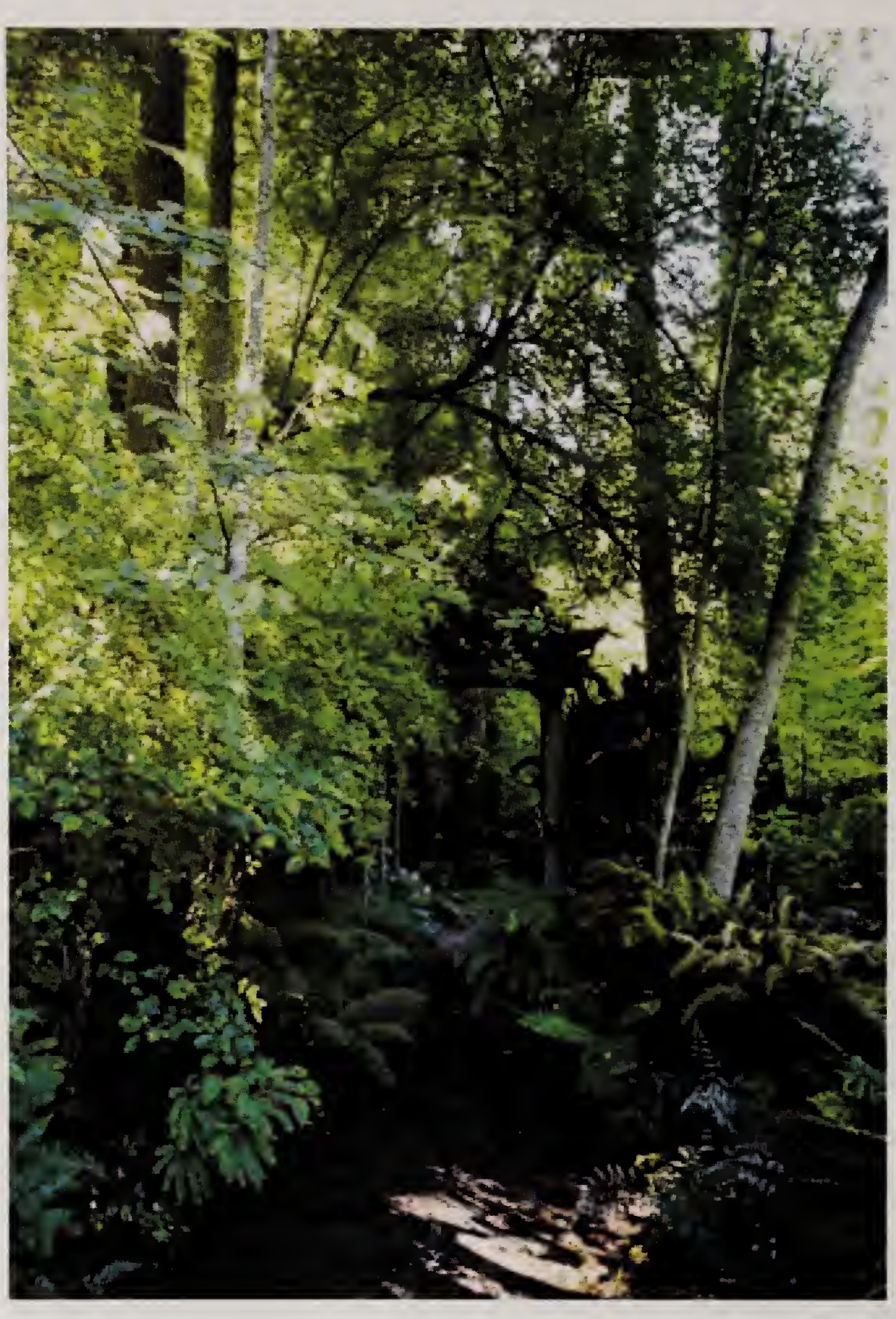
In Brief

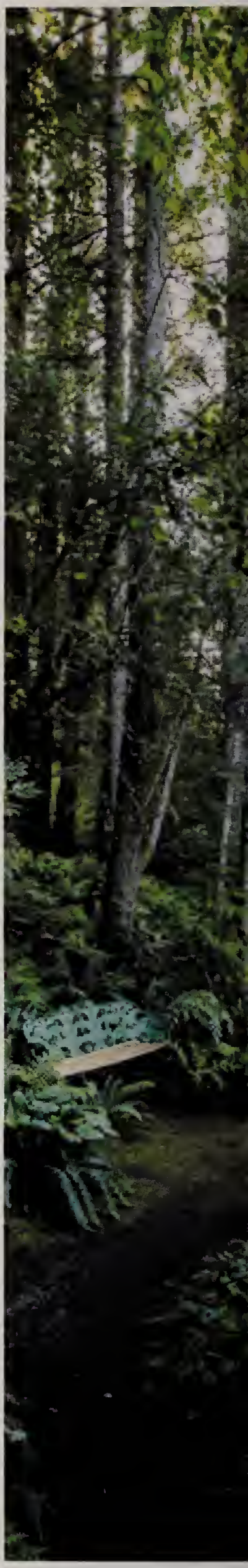
What Large, private stumpery garden, created using more than 175 tree stumps. It is planted with unusual ferns, including hardy tree ferns, shade-loving perennials, and northwest natives.
Where Vashon Island in Puget Sound, near Seattle, Washington, USA.
Size 10,000 square feet.
Soil Sandy and gravelly. Nearly 7.5 cubic metres of compost was brought in and more is added every spring.
Climate Mild, maritime – suited to fern culture.
Hardiness rating USDA 8a.

Lost and frond

It may look like a centuries-old woodland but Pat and Walt Riehl's stumpery was artfully constructed, with the help of UK fern expert Martin Rickard, just ten years ago

WORDS **VALERIE EASTON** PHOTOGRAPHS **CLAIRE TAKACS**





On an island in Puget Sound, in the far northwest corner of the USA, is one of the world's largest stumperies, created as part of a private garden. Fern expert Martin Rickard helped owners Pat and Walt Riehl design and plant their 10,000 square foot stumpery on Vashon Island, a short ferry ride west from Seattle.

Martin believes the Riehls' stumpery to be similar in size to the one HRH Prince Charles built at Highgrove, a creation credited with bringing these Victorian-era gardens back into vogue. Pat and Walt's stumpery, built with more than 175 native cedar stumps scavenged from construction sites, fits snugly into a ravine beneath a canopy of native trees. As the stumps settle into their slow decomposition, the shady grotto of a garden teems with shrews, frogs, insects and birds of every description (the drumming of busy woodpeckers echoes through the canopy).

"As soon as I saw the ravine I knew it should be a stumpery," says Pat. "I've visited Highgrove a couple of times, and was inspired by it, but wanted to make a very different kind of stumpery." The topography of her property is ideal; while Highgrove is mostly flat, the Riehls' garden falls sharply away from the house into a long, deep gully.

When the Riehls bought the place in 2006, the ravine was so overgrown with brambles and stinging nettles they could only guess at its shape and depth. They followed a deer path down the slope to start clearing out ▷

This image A replica of the 'Fern and Blackberry' bench, originally created by the Coalbrookdale foundry in around 1858, offers a place to linger along the main trail. The path leads past tree ferns and moss-coated stumps in a forest scene that looks naturalistic but has been skillfully constructed.

Left Silvery-toned painted ferns (*Athyrium niponicum* var. *pictum* 'Burgundy Lace') and shield ferns (*Polystichum setiferum* 'Pulcherrimum Bevis') lead to the stumpery entrance.

History of the stumpery

The first stumpery was built by artist and gardener Edward Cooke at Biddulph Grange in Staffordshire, around 1856. What could have inspired these grotto-like, roots-in-the-air gardens? Perhaps it was a combination of the Victorian fern craze and the era's love of gothic fairy tale that resulted in turning stumps upside down to plant among their roots. Or maybe it was more a practical matter of English soil not having enough large rocks on which to create fern gardens. Tree stumps were more plentiful and could support ferns and other shade-loving plants. Ferns thrive best in shady, moist soil, although they will tolerate some sun. You can improve moisture retention by incorporating organic matter, such as compost or leaf mould, to the soil.

As the stumps settle into their slow decomposition, the shady grotto of a garden teems with shrews, frogs, insects and birds of every description

The view towards the house reveals the contours of the ravine that originally inspired Pat.

▷ the thick undergrowth. Free of weeds and debris, the ravine looked like a bare scar in the landscape. But undeterred, and with her stumpery vision in mind, Pat continued her travels around the USA and to Europe and Japan to study ferns and visit stumperies.

Martin started work on the garden in 2007. He fell in love with northwest native sword ferns, and convinced Pat to use their strong, vertical lines throughout the garden. The scale of these plants suited a gardener like Pat, who thinks big. Her first order of ferns numbered more than 500, and she's since added to her collection. "We had to plant in masses, it was the only sane way to make a garden this large," she says.

"I love that there are no flowers, the garden is monochromatic and built around texture," she adds. The main theme is simply shades of green and brown: conifer trunks, roots, stumps, ferns and moss. "My other great love is epimediums," says Pat, who grows 150 types of this evergreen ground-cover plant.

Pat claims she's no designer. "I walk around, find a hole, and put a plant in it," she says. She credits Martin, who has visited Vashon three times to help with the stumpery, for the naturalistic flow of the garden. "Martin designed the main path to wind around the contours of the land, so it doesn't reveal everything at once," says Pat. The first focal point you see as you descend into the gully is a metal table planted in tiny ferns and little, precious ephemerals. Walt built the entry pergola, a metal armature beneath a pile-up of stumps so dense you'd never know there's a scaffold supporting the mysteriously dark tunnel. The spreading fronds of 16 tree ferns form a paler layer beneath the high canopy of native firs and cedars. *Podophyllum versipelle* 'Spotty Dotty' and the intensely textural upside-down fern (*Arachniodes standishii*) give reason to linger longer on the path. "Even familiar plants look different set against the burls and roots," says Pat, whose favourite spot is deep in the ravine where she can look up through gauzy fronds of the tree ferns.

After completing the main work of the stumpery, Pat came back up the slope to plant its margins. Giant Himalayan lilies (*Cardiocrinum giganteum*), drifts of native orchids and masses of hostas and hydrangeas create a harmonious transition between the more conventionally cultivated parts of the garden and the fern extravaganza in the gully.

Pat cares for the garden herself. "I'm a compulsive weeder," she says, which is a good thing because she's still dealing with persistent brambles and bracken fern. "Everyone gave me recipes for moss, but I just let it grow as it would," she says. Between the decomposing tree stumps and a soft blanketing of moss, the garden feels deeply green and pleasantly primeval. In early November, Pat carefully wraps the trunks of the *Dicksonia antarctica* and the *Dicksonia fibrosa* to protect them from rain and rot. "It's all been such a learning process," says Pat, who stops to pluck a weed here and pet a fern frond there as she navigates the shady pathways of her maturing garden. "Stumperies transport you to another place – it gives me such a feeling of serenity." □

9 of Pat Riehl's favourite ferns

1 *Blechnum penna-marina*
An evergreen ground cover with leathery fronds, used throughout the garden for its rosy pink new growth. 15cm. AGM*. RHS H4, USDA 6a-8b†.

2 *Pyrrosia lingua*
"I saw pyrrosias growing wild when I was in Japan," says Pat. This felt fern grows happily in a small amount of gritty soil on the surface of rocks or stumps. 30cm. USDA 7b-10b.

3 *Polystichum setiferum* 'Pulcherrimum Bevis'
A choice cultivar of the soft shield fern, these delicate evergreens look their best grouped together for impact. 40cm. AGM. RHS H6, USDA 4a-9b.

4 *Polypodium vulgare* 'Elegantissimum'
"I was very lucky to bring this back from England with me," says Pat of this ruffled collector's fern. Martin Rickard has the UK National Collection of polypodiums. 30cm. USDA 5a-8b.

5 *Adiantum venustum*
The Himalayan maidenhair fern serves as evergreen ground cover, thriving in a hard winter without a whimper. 15-30cm. AGM. RHS H7, USDA 5a-8b.

6 *Osmunda regalis*
The ancient royal fern is unusual because it holds its spores on the tips of the fronds. 2m. AGM. RHS H6, USDA 2a-10b.

7 *Dicksonia antarctica*
"I can't imagine the stumpery without these hardy tree ferns – they're in a league of their own," says Pat. 3-6m. AGM. RHS H3, USDA 9a-11.

8 *Dryopteris sieboldii*
This is evergreen, which is unusual for a wood fern. It's slow to get established but then it grows large and dramatic. 50cm. AGM. USDA 7a-10b.

9 *Asplenium trichomanes*
A fragile looking but tough small evergreen fern, the maidenhair spleenwort grows best in rocky soil or on stumps. 40cm. AGM. RHS H6, USDA 2a-8b.

*Holds an Award of Garden Merit from the Royal Horticultural Society. †Hardiness ratings given where available.

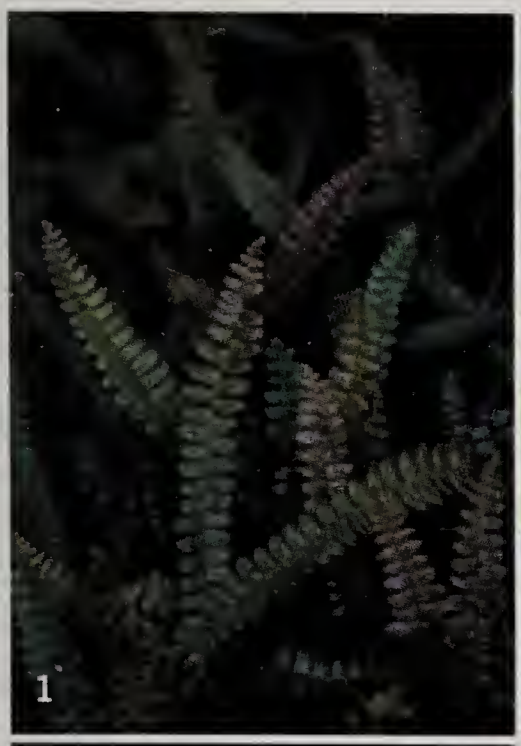
Stumperies to visit

IN THE USA

The Victorian Stumpery at the **Rhododendron Species Botanical Garden** in Federal Way, Washington, is one of the largest public stumperies, with more than 140 stumps and logs. rhodygarden.org

IN THE UK

The stumpery at **Biddulph Grange**, in Staffordshire, dates back to the Victorian age. Built in the 1850s, it's considered to be the first stumpery ever created. nationaltrust.org.uk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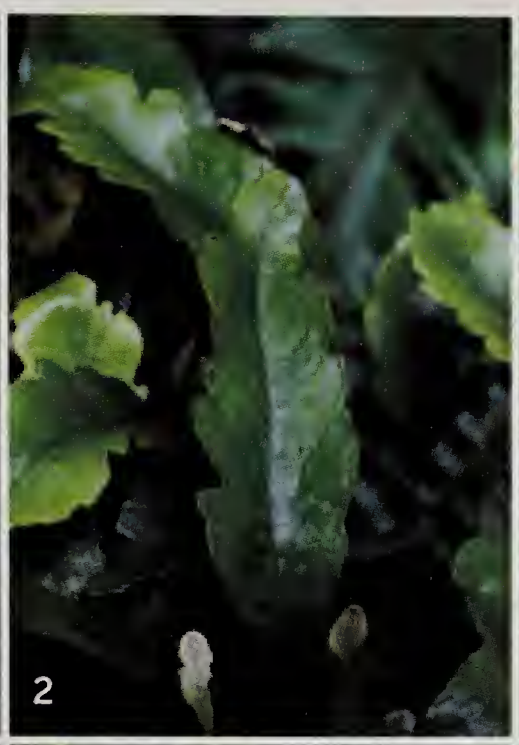
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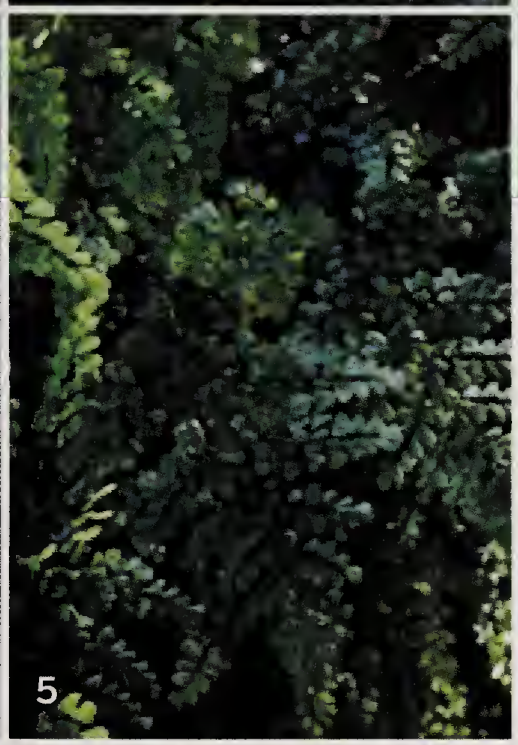
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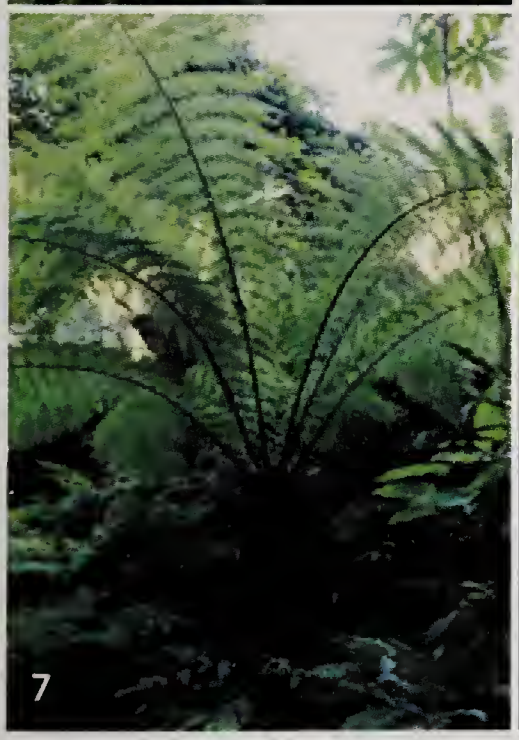
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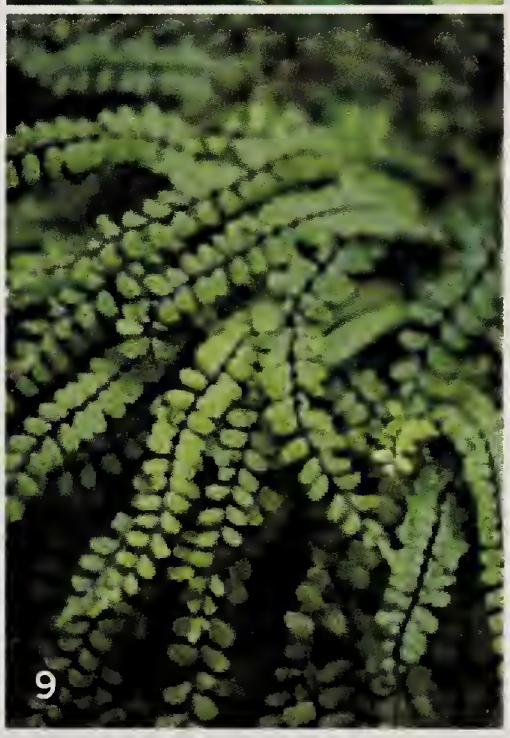
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Burnby Hall Gardens, in Yorkshire, has a relatively new stumpery inspired by Highgrove. burnbyhallgardens.com

HRH Prince Charles's garden at **Highgrove,** in Gloucestershire, has the largest stumpery in Britain. Designed by Julian and Isabel Bannerman, it employs roots of sweet chestnut and scaffolding to support plantings of hellebores, hostas and ferns. highgrovegardens.com

Ickworth Stumpery, in Suffolk, is part of a larger, Italianate-style garden. The grotto-like stumpery, originally built in the 19th century, was recently extended. nationaltrust.org.uk

Give Big Donors

The Hardy Fern Foundation board would like to thank the following donors for supporting our projects and goals via contributions to the Seattle Foundations's annual Give Big Program.

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Rosalind Williams

Taxonomy and Biology of Ferns and Lycophytes
Instructors: Robbin Moran and Carl Taylor
August 14 - 20, 2016
Eagle Hill Institute, Steuben, ME

Field course taught on the eastern coast of Maine. Course participants include graduate students, professional field biologists, university professors, personnel from federal and state agencies, numerous environmental organizations and consulting firms, and beginning to advanced amateur naturalists. For more information, go to eaglehill.us/seminars or contact Marilyn Mayer (marilyn@eaglehill.us, 207-546-2821 x1).

Distant Shores

Jo Laskowski

Seattle, WA

Once upon a time there was a man who lived on an island. He loved all plants, but he had given his heart to ferns. He was a Great Talker. When he Talked, the words flowed from his mouth bathed in honey and the joy of his love for what he Talked about.

Dr. Carlos Sanchez - Photo courtesy of Greg Graves

He wanted to Talk to people, people all over. It was a difficult thing that he wanted. After many great travails, he made his way to a new audience.

He Talked to the new audience about the island with three mountain ranges. Most of the ferns he loved lived in the three ranges. Some of them dwelled on the ground, and lived in the understory of the forests. There were Thelypteris, Polypodium, Dryopteris, Pleopeltis. He told how people were treated for hepatitis with *Pleopeltis polypodiodes*. Anemia, Notholaena, Adiantopsis. Alsophila and Cyathea.
Some ferns grew on rocks, or on other plants, in the cloud forests. He Talked of the filmy ferns that lived there, where the fog hung low and the moss abounded. He loved them so much he studied and studied and studied them, and did Great Writing about them, and gave a Great Talk about them to earn respect. Hymenophyllum, Hymenophyllum, Hymenophyllum; the word flowed from his lips and his face was wreathed in smiles. Trichomanes and Osmunda.

He Talked about the karstic forest, and the "mogote" complex. The mogote complex, where the sinking/rising/collapsing/eroding of limestone strata left hillocks of resistant rock. They dotted this landscape. Nearly vertical drops from the flat plain on top of the hillock to the flat, alluvial plain below hosted one type of vegetation, and each plain hosted quite another. He Talked and the names poured forth: Adiantopsis, Polystichum, Ctenitis, Cyathea, Asplenium. Adiantum, Atalopteris, Alsophila.

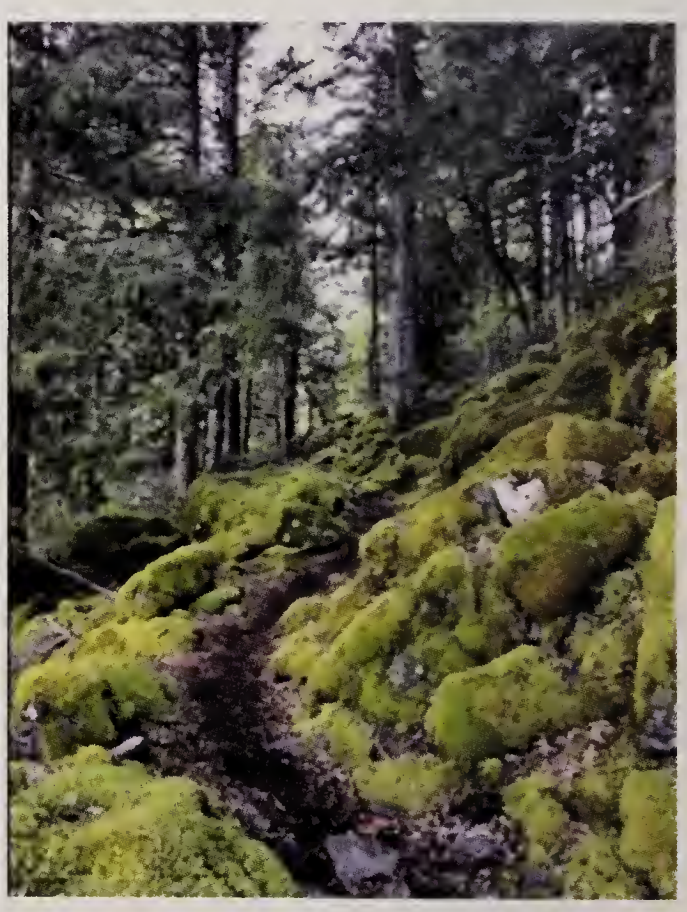
He Talked about capturing ferns and keeping them in captivity. It is difficult to make everything the same in captivity as it is in the wild—humidity, light, soil moisture. It is difficult to mimic the accompanying vegetation, and the air pressure at the preferred elevation. He tried. He tried and some ferns thrived in soils made from sand and organic components. He used cocoa fiber instead of tree fern fiber because tree ferns were too much cut down. Shade from coconut leaves and palm leaves protected

the ferns. The coconut leaves and the palm leaves got moved with the movement of the sun to protect the ferns. A lot of ferns did grow in captivity. Adiantum, Anemia, Angiopteris. Blechnum. Callipteris, Campyloneuron, Cyathea, Cyclopeltis, Cyrtomium. Dennstaedia, Diplazium. Equisetum. Hemionitis. Macrothelypteris, Marsilea, Microsorum. Nephrolepis. Olfersia, Osmunda. Parapolystichum, Platycerium, Polystichum, Pteris. Tectaria, Thelypteris. Woodwardia.
He Talked the words and the music flowed and the names sparkled. Who was this small man whose eyes shown with the love he carried for his ferns? Where were these distant shores? He was wearing a gorgeously cut suit, he was tan and short-haired and bearded and mustached. His face smiled and his hands rose and fell with his music. After many great travails it was Carlos Sánchez who stood before us on Tuesday, May 10th, 2016 at the Miller Garden in Seattle, Washington. He told us about the ferns of Cuba. He was a Great Talker, and a man with much love to share.

Author's note:
Dr. Carlos Sánchez is Senior Professor and Senior Research Botanist at the National Botanic Garden of the University of Havana in Cuba. He received the National Award in Botany from the Cuban Society of Botany in 2013, as well as the prize from the University of Havana for the Best Scientific Book in 2000 and 2008 . He has authored many scientific articles, and a book about the ferns and lycophytes of Cuba. He has given lectures and conducted research at universities in Brazil, Panama, Nicaragua, and Spain.
Carlos Sánchez defended his PhD on filmy ferns.
There are 32 families, 112 genera, and approximately 551 species of ferns in Cuba. Many ferns are endangered. Internet access is highly restricted in Cuba, making research extraordinarily difficult and extraordinarily limited. Since the appearance of swine flu in Cuba in 2009 no further exchanges of vegetative material were permitted, hence no exchange of spores.

Hardy Fern Foundation 2016 hike!

Please join us for an exciting outing to one of the great ferning spots in the Pacific Northwest—the Perry Creek trail. Located in the North Cascades, the trail lies within an area that was designated a Natural Resource Area in 1997 in order to preserve this unique environment from encroachment and degradation. It's the unusual intersection of environmental and geologic factors that makes



for some uncommon plant associations, and over the course of this relatively short hike we are hoping to see no less than fifteen fern species.

DATE: Saturday, **AUGUST 13th,** 2016.

COST: $35.00 per person

WHERE: meet at the Verlot Ranger Station.
33515 Mountain Loop Highway
Granite Falls, WA 98252
360-691-7791
Restroom and pay phone available here. **NO CELL SERVICE.**

WHEN: by **8:15 A.M.**

PARKING: We'll be carpooling from the ranger station to the trailhead parking lot. There's a parking lot across the road from the ranger station where we can leave cars during the hike. The lot would be on your right hand as you head east on the Mountain Loop Highway. Trail passes will be available for the cars that are carpooling.

TRAILHEAD: We'll go over the itinerary and set a time to have lunch, and a return time. Sack lunches will be distributed. Intended to start on trail by 915AM. Expected to be back down to parking lot in mid- to late-afternoon. Restrooms available at trailhead. Please bring any personal things with you that you'll need to be comfortable.

WHAT YOU GET FOR YOUR MONEY: trail pass! sack lunch! water! fern expertise! unlimited **photographic opportunities!** And an **amazing experience** in the company of like-minded ferny fanatics!

TIDBITS: Perry Creek is considered to be a moderate hike on a trail that's well-traveled and clearly marked. The elevation gain is steep in places, the trail is narrow and mostly cobble; we'll probably need to climb over downed logs. There are several rocky creek beds to cross, but most are dry and all have been passable recently. Sturdy shoes are recommended, sunscreen is advised, and bring appropriate gear in case the weather's being Pacific Northwest… Bug repellent might be a good idea, and dogs are allowed on the trail PROVIDED they're on a leash.

REGISTRATION: hff@rhodygarden.org
253-838-4646, x 111.
PAYMENT: send a **check** to HFF: PO Box 3797, Federal Way WA 98063-3797. Make a payment using PayPal: http://www.hardyferns.org/shop.php. Enter the name of the event—Perry Creek hike—and the correct dollar amount for the number of reservations you're making. You'll receive an email confirmation that your payment has been received, regardless of the method you use to pay.

HFF Fall Social and Potluck

Hardy Fern Foundation Members and their Guests are invited to:
The Hardy Fern Foundation Fall Social and Potluck Lunch
October 22, 2016 from 11 am to 3 pm at the
Bellevue Botanical Garden Education Center

Richie Steffen Curator, Elisabeth C Miller Botanical Garden, will give a talk on
The Odd & Unusual and the Particular & Precious Ferns of My Travels.
A fern lecture dedicated to an assortment of fantastic species and Victorian oddities that have eluded widespread cultivation. Richie has had the pleasure of visiting dozens of specialty fern gardens and nurseries and traveling to several countries to see ferns in the wild. He will share images of pteridophtye gems he has encountered over the years and kindle a love and lust for these fabulous foliage plants.

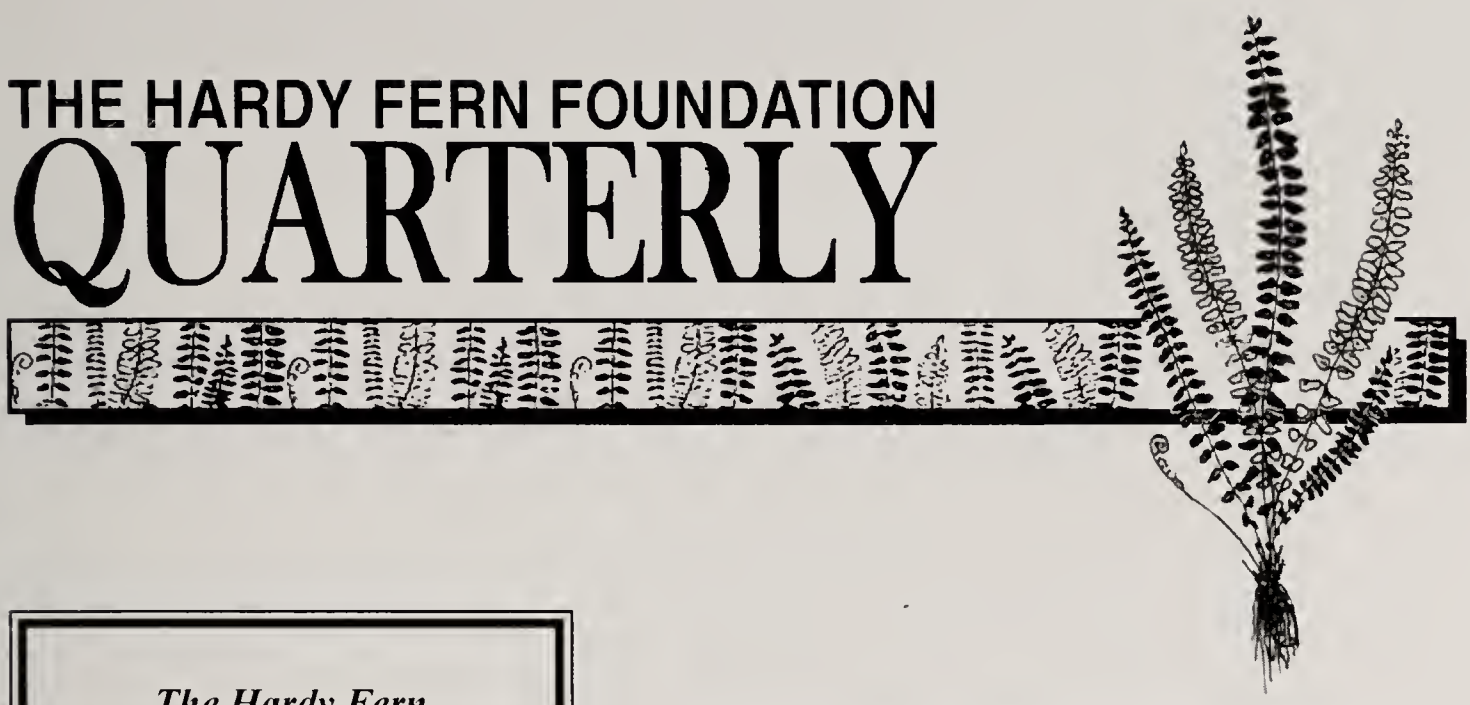
Please RSVP if you will be attending and tell us if you will be bringing a main dish, side dish, or dessert. Jo Laskowski hff@rhodygarden.org 253-838-4646 x 111

San Diego Fern Society

2016 Fern Show and Sale
August 20th 12 noon to 5
21st 10am to 4
Room 101 Casa del Prado
Balboa Park

sandiegofernsociety.com

THE HARDY FERN FOUNDATION
QUARTERLY



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